

Name \_\_\_\_\_

## Algebra • Apply Volume Formulas

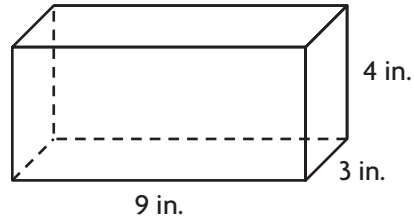
You can use a formula to find the volume of a rectangular prism.

$$\text{Volume} = \text{length} \times \text{width} \times \text{height}$$

$$V = (l \times w) \times h$$

**Find the volume of the rectangular prism.**

**Step 1** Identify the length, width, and height of the rectangular prism.



length = 9 in. width = 3 in. height = 4 in.

**Step 2** Substitute the values of the length, width, and height into the formula.

$$V = (l \times w) \times h$$

$$V = ( \underline{9} \times \underline{3} ) \times \underline{4}$$

**Step 3** Multiply the length by the width.

$$V = (9 \times 3) \times 4$$

$$V = \underline{27} \times 4$$

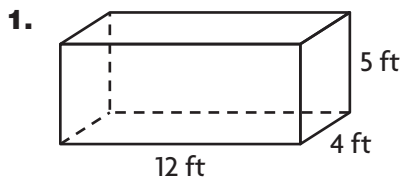
**Step 4** Multiply the product of the length and width by the height.

$$V = 27 \times \underline{4}$$

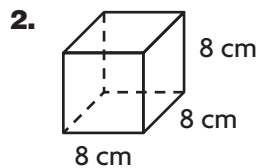
$$= \underline{108}$$

So, the volume of the rectangular prism is 108 cubic inches.

**Find the volume.**



$V =$  \_\_\_\_\_



$V =$  \_\_\_\_\_

Name \_\_\_\_\_

## Problem Solving • Compare Volumes

A company makes aquariums that come in three sizes of rectangular prisms. The length of each aquarium is three times its width and depth. The depths of the aquariums are 1 foot, 2 feet, and 3 feet. What is the volume of each aquarium?

Read the Problem	Solve the Problem																
<p><b>What do I need to find?</b></p> <p>I need to find the <u>volume</u> of each aquarium.</p>	<p><b>Think:</b> The depth of an aquarium is the same as the height of the prism formed by the aquarium</p>																
<p><b>What information do I need to use?</b></p> <p>I can use the formula for volume, <math>V = l \times w \times h</math>, or <math>V = B \times h</math>. I can use <u>1 ft, 2 ft, and 3 ft</u> as the depths. I can use the clues <u>the length is three times the width and depth</u>.</p>	<table border="1"> <thead> <tr> <th>Length (ft)</th> <th>Width (ft)</th> <th>Depth, or Height (ft)</th> <th>Volume (cu ft)</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>1</td> <td>1</td> <td>3</td> </tr> <tr> <td>6</td> <td>2</td> <td>2</td> <td>24</td> </tr> <tr> <td>9</td> <td>3</td> <td>3</td> <td>81</td> </tr> </tbody> </table>	Length (ft)	Width (ft)	Depth, or Height (ft)	Volume (cu ft)	3	1	1	3	6	2	2	24	9	3	3	81
Length (ft)	Width (ft)	Depth, or Height (ft)	Volume (cu ft)														
3	1	1	3														
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9	3	3	81														
<p><b>How will I use the information?</b></p> <p>I will use the <u>volume formula</u> and a <u>table</u> to list all of the possible combinations of lengths, widths, and depths.</p>	<p>So, the volumes of the aquariums are 3 cubic feet, 24 cubic feet, and 81 cubic feet.</p>																

- Jamie needs a bin for her school supplies. A blue bin has a length of 12 inches, a width of 5 inches, and a height of 4 inches. A green bin has a length of 10 inches, a width of 6 inches, and a height of 5 inches. What is the volume of the bin with the greatest volume?
- Suppose the blue bin that Jamie found had a length of 5 inches, a width of 5 inches, and a height of 12 inches. Would one bin have a greater volume than the other? **Explain.**

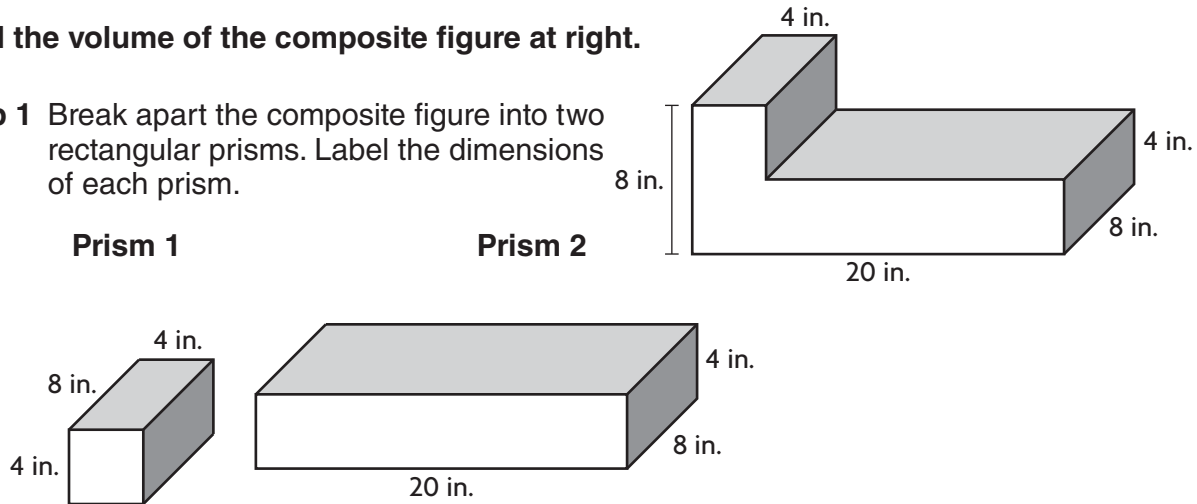
Name \_\_\_\_\_

## Find Volume of Composed Figures

A composite figure is a solid made up of two or more solids. To find the volume of a composite figure, first find the volume of each solid that makes up the figure. Then find the sum of the volumes of the figures.

Find the volume of the composite figure at right.

**Step 1** Break apart the composite figure into two rectangular prisms. Label the dimensions of each prism.



**Step 2** Find the volume of each prism.

**Prism 1**

$$V = (l \times w) \times h$$

$$V = \underline{4} \times \underline{8} \times \underline{4}$$

$$V = 128 \text{ in.}^3$$

**Prism 2**

$$V = (l \times w) \times h$$

$$V = \underline{20} \times \underline{8} \times \underline{4}$$

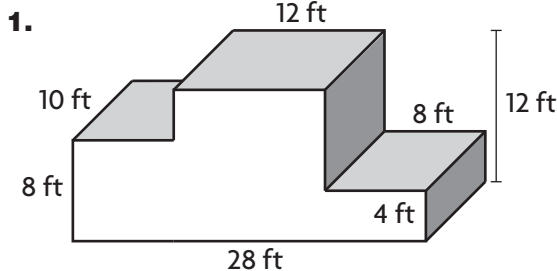
$$V = 640 \text{ in.}^3$$

**Step 3** Find the sum of the volumes of the two prisms.

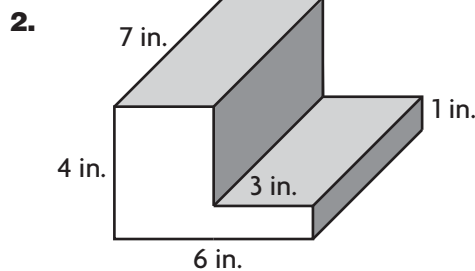
$$\begin{aligned} \text{Volume of Prism 1} + \text{Volume of Prism 2} &= \text{Volume of Composite Figure} \\ \underline{128 \text{ in.}^3} + \underline{640 \text{ in.}^3} &= \text{Volume of Composite Figure} \\ \underline{768 \text{ in.}^3} &= \text{Volume of Composite Figure} \end{aligned}$$

So, the volume of the composite figure is  $768 \text{ in.}^3$

Find the volume of the composite figure.



$V =$  \_\_\_\_\_



$V =$  \_\_\_\_\_